

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) An audio device for providing ~~musical signals~~ music to a user, comprising:
 - a) ~~at least one transducer~~ transducers for generating, such that enables the music from musical signals, is to be heard by said user via transcutaneous bone conduction; and
 - b) ~~a support means for said transducer holding the transducers to be in vibratory contact with the head of said user~~ a user's head, wherein each of the transducers is positionable at multiple locations on said support; and
 - ~~c) a housing means for housing said at least one transducer.~~

2. (Currently Amended) The audio device according to claim 1, further comprising a housing wherein said at least one transducer includes a plurality of transducers means for housing each of the transducers which includes a waterproofing polymeric material which covers each of the transducers.

3. (Canceled).

4. (Currently Amended) The audio device according to claim ~~[[2]]~~ 1, wherein the musical signals ~~frequency range is~~ are produced in split into three multiple frequency channels.

5. (Currently Amended) The audio device according to claim 4, wherein ~~said three~~ the multiple frequency channels ~~consist of~~ include:
 - a) a low frequency channel range, corresponding to music signals at frequencies in a range of 40 to 1,000 Hz;
 - b) a mid frequency channel range, corresponding to music signals at frequencies in a range of 250 to 6,000 Hz; and

7 c) a high frequency channel range; corresponding to music signals at frequencies in a
8 range of 5000 to 20,000 Hz.

1 6. (Currently Amended) The audio device according to claim 1 ~~[[3]]~~, wherein at least one of
2 ~~[[said]]~~ the transducers ~~in said array~~ is an ultrasonic transducer.

1 7. (Currently Amended) The audio device according to claim 1 ~~[[3]]~~, wherein at least one of
2 ~~[[said]]~~ the transducers ~~in said array~~ is a vibrotactile transducer.

1 8. (Currently Amended) The audio device according to claim 1, further including at least
2 one amplifier coupled to one or more of the transducers for amplifying the musical
3 signals.

1 9. (Currently Amended) The audio device according to claim 1, further comprising
2 attachment features which attach said transducers to said support ~~at least one of said~~
3 ~~transducers is positionable at the front of the head of said user.~~

1 10. (Currently Amended) The audio device according to claim ~~[1]~~ 9, wherein that attachment
2 features are attachment features selected from the group consisting of slide positioning
3 guide features, hook features, snaps features and hook and loop fabric features ~~at least~~
4 ~~one of said transducers in said array is positionable at the back of the head of said user.~~

1 11-14. (Canceled).

1 15. (Currently Amended) The audio device according to claim 5, wherein ~~[[said]]~~ a volume
2 of the music from the low frequency channel range ~~volume~~ is adjustable.

1 16. (Currently Amended) The audio device according to claim 5, wherein ~~[[said]]~~ a volume
2 of the music from the mid frequency channel range ~~volume~~ is adjustable.

1 17. (Currently Amended) The audio device according to claim 5, wherein ~~[[said]]~~ a volume
2 of the music from the high frequency channel range ~~volume~~ is adjustable.
3

- 4 18. (Currently Amended) The audio device according to claim ~~[[1]]~~ 5, wherein ~~[[said]]~~ the
5 music generated from the mid frequency-range channel has a fixed maximum signal level
6 of volume of 90 dBa for 8 hours.
- 1 19. (Currently Amended) The audio device of claim 1, wherein ~~said waterproof recreational~~
2 the audio device transmits [[a]] the music at musical signal of a high fidelity frequency
3 frequencies of 40 KHz or more response across a broad frequency range where there is:
4 [[a]] a low frequency response is in the range of 40-1000 Hz;
5 [[b]] a mid frequency response is in the range of 250-6000 Hz; and
6 [[c]] a high frequency response is in the range of 5000-20,000 Hz.
- 1 20. (Currently Amended) The audio device of claim 19, wherein ~~said at least one transducer~~
2 includes the transducers include an ultrasonic transducer
- 1 21. (Currently Amended) The audio device of claim 19, wherein ~~said at least one transducer~~
2 includes the transducers include a vibrotactile transducer.
- 1 22. (Currently Amended) The audio device of claim 19, wherein ~~said waterproof recreational~~
2 the audio device includes a volume control for adjusting a volume of music with high
3 fidelity frequencies of 40,000 Hz or more an adjusting capability for the mid-range
4 frequency response, such that:
5 [[a]] said mid frequency range volume can be adjusted to allow environmental noise to
6 be heard by the user;
7 [[b]] said mid frequency range has a fixed minimum level to minimize nuisance noise
8 for individuals near said waterproof recreational device; and
9 [[c]] said mid range has a fixed maximum level to restrict harmful dB noise levels for
10 user.
- 1 23. (Currently Amended) The audio device of claim ~~[[19]]~~ 5, wherein a volume of at least
2 one of the multiple frequency channels said low frequency range is independently
3 adjustable from a volume of another of the multiple frequency channels.
- 1 24. (Canceled).

- 1 25. (Canceled).
- 1 26. (Currently Amended) The audio device of claim 19, wherein the support comprises a
2 band which fits on a user's head ~~said mid frequency range has a fixed maximum signal~~
3 ~~level of 90 dBa for 8 hours.~~
- 1 27. (Currently Amended) The audio device of claim 1 further comprising a sound source for
2 providing the musical signals to the transducers ~~in communication with said at least one~~
3 ~~transducer, said sound source generating a music signal which is received by said at least~~
4 ~~one transducer.~~
- 1 28. (Currently Amended) The audio device of claim 27 wherein the sound source provides
2 the musical signals to the transducers through a wire connection ~~said communication~~
3 ~~between said sound source and said at least one transducer is via a wired connection.~~
- 1 29. (Currently Amended) The audio device of claim 27 wherein the sound source provides
2 the musical signals to the transducers through ~~said communication between said sound~~
3 ~~source and said at least one transducer is via a wireless connection.~~
- 1 30. (Currently Amended) The audio ~~[[video]]~~ device of claim 27 wherein ~~[[said]]~~ the sound
2 source attaches to the support ~~is affixed to said means for said at least one transducer to~~
3 ~~be in contact with the head of said user.~~
- 1 31. (Currently Amended) The audio device of claim 27 wherein ~~[[said]]~~ the sound source is
2 selected from the group consisting of an MP3 player, a tape player, a radio, an audio
3 transceiver, and a disc player.
- 1 32. (Currently Amended) A recreational audio device, comprising :
2 a) ~~at least one transducer~~ transducers that include a polymeric waterproofing cover
3 and which enables that produce an audio output ~~music to be heard by a user via~~
4 ~~transcutaneous bone conduction; and~~

5 b) a support which fits around a user's head and ~~which supports said at least one~~
6 ~~transducer in contact with a head of a user at~~ holds the transducer in contact with a
7 plurality of locations around the head of [[said]] the user, wherein the transducers
8 are movable to different locations on said support, and wherein the transducers
9 generate an audio output transmitted to the user through transcutaneous bone
10 conduction.

1 33. (Canceled).

1 34. (Canceled).

1 35. (Currently Amended) The recreational audio device according to claim 32 wherein ~~said~~
2 ~~at least one transducer can slide to different locations on said support~~ the transducers are
3 movable to different locations on said support through one or more of slide positioning
4 guide features, hook features, snap features and hook and loop fabric features.

1 36-38. (Canceled).

1 39. (Currently Amended) The recreational audio device of claim 32 further comprising a
2 sound source for ~~conveying~~ providing audio signals that generate the audio output
3 through transducers ~~to said at least one transducer.~~

1 40. (Currently Amended) A method for a user to listen to music via transcutaneous bone
2 conduction, comprising the steps of:
3 a) supplying musical signals from a source to transducers each of which include a
4 water proof housing at least partially formed from a polymeric material ~~at least~~
5 ~~one transducer capable of transcutaneous bone conduction;~~
6 b) ~~contacting a user's head with said at least one transducer~~ the transducers at
7 positions on the user's head; and
8 c) transmitting music through the user's head by transcutaneous bone conduction
9 ~~said musical signal to the user~~ through the polymeric material while the user's
10 head is under water.

- 1 41. (Currently Amended) The method recited in claim 40, further comprising a step of tuning
2 ~~musical sound heard by a user~~ the music.
- 1 42. (Currently Amended) The method of claim 41 wherein ~~said step of tuning comprises~~
2 ~~changing point of contact of at least one transducer on a user's head~~ the music comprises
3 changing one or more of the positions of the transducers on the user's head.
- 1 43. (Currently Amended) The method of claim ~~[[42]]~~ 40, wherein the musical signals are
2 divided among multiple frequency channels ~~wherein changing is accomplished by~~
3 ~~repositioning a support which supports said at least one transducer on said user's head~~.
- 4
5 44. (Canceled).
- 1 45. (Currently Amended) The method of claim 42 wherein ~~changing is accomplished by~~
2 ~~sliding said at least one transducer to a different location on a support which supports said~~
3 ~~at least one transducer~~ the one or more of the positions of the transducers on the user's
4 head includes changing a position of one or more of the transducers on said support.
- 1 46. (Currently Amended) The method of claim 40 comprising adjusting a volume output of
2 one or more of the transducers ~~of at least one a high, mid, or low frequency transmitted~~
3 ~~via transcutaneous bone conduction via said at least one transducer~~.
- 1 47. (Currently Amended) The method of claim ~~[[40]]~~ 43 further comprising limiting ~~a mid~~
2 ~~frequency range~~ has a fixed maximum signal level of 90 dBa for 8 hours an output of
3 music from one or more the multiple frequency channels.
- 1 48. (New) An audio device comprising:
2 a) a source for providing audio signals with multiple frequency channels;
3 b) transducers in communication with the source and being configured to operate
over the multiple frequency channels and thereby produce an audio output; and
c) control means for independently controlling audio signals at each of the multiple
frequency channels.

- 1 49. (New) The audio device of claim 48, wherein the transducers include polymeric surfaces,
2 and wherein the transducers transmit the audio output through the polymeric surfaces to a
3 user via transcutaneous bone conduction.
- 1 50. (New) The audio device of claim 48, further comprising a support structure, wherein each
2 of the transducers are configured to be removably secured to multiple locations on the
3 support structure.
- 1 51. (New) The audio device of claim 1 wherein said support is a band connected to a pair of
2 swimming goggles, and said transducers are positionable at multiple locations along a
3 length of said band.

CLAIMS

What is claimed is:

1 1. A waterproof recreational audio device for providing musical signals to a user, comprising:
2 at least one transducer, such that said transducer enables music to be heard by said user
3 via transcutaneous bone conduction;
4 a means for said at least one transducer to be in vibratory contact with the head of said
5 user; and
6 means for waterproofing said at least one transducer.

1 2. The waterproof recreational audio device according to claim 1, wherein said at least one
2 transducer includes a plurality of transducers.

1 3. The waterproof recreational audio device according to claim 2, wherein said plurality of
2 transducers is arranged in an array.

1 4. The waterproof recreational audio device according to claim 2, wherein the musical
2 frequency range is split into three frequency channels.

1 5. The waterproof recreational audio device according to claim 4, wherein said three frequency
2 channels consist of:
3 a low frequency range,
4 a mid frequency range, and
5 a high frequency range.

1 6. The waterproof recreational audio device according to claim 3, wherein at least one of said
2 transducers in said array is an ultrasonic transducer.

1 7. The waterproof recreational audio device according to claim 3, wherein at least one of said
2 transducers in said array is a vibrotactile transducer.

1 8. The waterproof recreational audio device of claim 1, wherein said audio device includes at
2 least one amplifier.

1 9. The waterproof recreational audio device according to claim 1, wherein at least one of said
2 transducers is positionable at the front of the head of said user.

1 10. The waterproof recreational audio device according to claim 1, wherein at least one of said
2 transducers in said array is positionable at the back of the head of said user.

1 11. The waterproof recreational audio device according to claim 1, wherein said transducer is
2 associated with a band that encircles the head of a user.

1 12. The waterproof recreational audio device according to claim 1, wherein said transducer is
2 associated with a hat that is worn on the head of said user.

1 13. The waterproof recreational audio device according to claim 1, wherein said transducer is
2 associated with a helmet that is worn on the head of said user.

1 14. The waterproof recreational audio device according to claim 1, wherein said transducer is
2 associated with a band of recreational eye wear selected from the group consisting of swim
3 goggles, ski goggles, snorkel mask, and sun glasses.

1 15. The waterproof recreational audio device according to claim 5, wherein said low frequency

2 range volume is adjustable.

1 16. The waterproof recreational audio device according to claim 5, wherein said mid frequency
2 range volume is adjustable.

1 17. The waterproof recreational audio device according to claim 5, wherein said high
2 frequency range volume is adjustable

1 18. The waterproof recreational audio device according to claim 1, wherein said mid frequency
2 range has a fixed maximum signal level of 90 dBa for 8 hours.

1 19. The waterproof recreational audio device of claim 1, wherein said waterproof recreational
2 audio device transmits a musical signal of a high fidelity frequency response across a broad
3 frequency range where there is:

4 a low frequency response is in the range of 40 - 1000 Hz

5 a mid frequency response is in the range of 250 - 6000 Hz, and

6 a high frequency response is in the range of 5000 - 20,000 Hz.

1 20. The waterproof recreational audio device of claim 19, wherein said at least one transducer
2 includes an ultrasonic transducer.

1 21. The waterproof recreational audio device of claim 19, wherein said at least one transducer
2 includes a vibrotactile transducer.

1 22. The waterproof recreational audio device of claim 19, wherein said waterproof recreational
2 audio device includes an adjusting capability for the mid range frequency response, such that:
3 said mid frequency range volume can be adjusted to allow environmental noise to be

4 heard by the user,
5 said mid frequency range has a fixed maximum level to minimize nuisance noise for
6 individuals near said waterproof recreational audio device, and
7 said mid range has a fixed maximum level to restrict harmful dB noise levels for user.

1 23. The waterproof recreational audio device of claim 19, wherein a volume of said low
2 frequency range is adjustable.

1 24. The waterproof recreational audio device of claim 19, wherein a volume of said mid
2 frequency range is adjustable.

1 25. The waterproof recreational audio device of claim 19, wherein a volume of said high
2 frequency range is adjustable.

1 26. The waterproof recreational audio device of claim 19, wherein said mid frequency range
2 has a fixed maximum signal level of 90 dBa for 8 hours.

1 27. The waterproof recreational audio device of claim 1 further comprising a sound source in
2 communication with said at least one transducer, said sound source generating a music signal
3 which is received by said at least one transducer.

1 28. The waterproof recreation audio device of claim 27 wherein said communication between
2 said sound source and said at least one transducer is via a wired connection.

1 29. The waterproof recreation audio device of claim 27 wherein said communication between
2 said sound source and said at least one transducer is via a wireless connection.

1 30. The waterproof recreation audio device of claim 27 wherein said sound source is affixed to
2 said means for said at least one transducer to be in contact with the head of said user.

1 31. The waterproof recreation audio device of claim 27 wherein said sound source is selected
2 from the group consisting of MP3 player, tape player, radio, audio transceiver, and disc player.

1 32. A recreational audio device, comprising:
2 at least one transducer which enables music to be heard by a user via transcutaneous bone
3 conduction; and
4 a support which supports said at least one transducer in contact with a head of a user at a
5 plurality of locations around the head of said user.

1 33. The recreational audio device according to claim 32 wherein said at least one transducer
2 includes a plurality of transducers.

1 34. The recreational audio device according to claim 32 wherein said at least one transducer
2 can be removed from said support and re-positioned at at least one different location on said
3 support.

1 35. The recreational audio device according to claim 32 wherein said at least one transducer
2 can slide to different locations on said support.

1 36. The recreational audio device according to claim 32 wherein said support can be oriented
2 at multiple orientations relative to a head of a user.

1 37. The recreational audio device of claim 36 wherein said support is a head band.

1 38. The recreational audio device of claim 32 further comprising waterproofing for said at least
2 one transducer.

1 39. The recreational audio device of claim 32 further comprising a sound source for conveying
2 musical signals to said at least one transducer.

1 40. A method for a user to listen to music via transcutaneous bone conduction, comprising the
2 steps of:

3 supplying musical signals from a source to at least one transducer capable of
4 transcutaneous bone conduction;
5 contacting a user's head with said at least one transducer; and
6 transmitting by transcutaneous bone conduction said musical signal to the user.

1 41. The method recited in claim 40, further comprising a step of tuning musical sound heard
2 by a user.

1 42. The method of claim 41 wherein said step of tuning comprises changing point of contact of
2 at least one transducer on a user's head.

1 43. The method of claim 42 wherein changing is accomplished by repositioning a support which
2 supports said at least one transducer on said user's head.

1 44. The method of claim 42 wherein changing is accomplished by repositioning said at least one
2 transducer on a support which supports said at least one transducer.

1 45. The method of claim 42 wherein changing is accomplished by sliding said at least one
2 transducer to a different location on a support which supports said at least one transducer.

1 46. The method of claim 40 comprising adjusting volume of at least one a high, mid, or low
2 frequency transmitted via transcutaneous bone conduction via said at least one transducer.

1 47. The method of claim 40 further comprising limiting a mid frequency range has a fixed
2 maximum signal level of 90 dBa for 8 hours.